Registration of Guichao 2 *eui* Rice Genetic Stock

The Agricultural Research Service, U.S. Department of Agriculture released rice genetic stock Guichao 2 *eui* (GSOR 11) (Reg. no. GS-1, PI 634574) in 2004. The Guichao 2 *eui* genetic stock carries the recessive tall *eui* (elongated uppermost internode) gene in an *indica* background, as opposed to *eui* mutants previously found in *japonica* rices. The *eui* plant type is potentially useful for better pollen transfer in hybrid rice seed production by raising the male line panicles above female line panicles or by obtaining better panicle exsertion of female line panicles from the flag leaf boot.

The Guichao 2 *eui* genetic stock was found in a gamma ray–mutagenized (200 Gy) M_2 population of the semidwarf *indica* cultivar Guichao 2 (PI 615013), grown at Stuttgart, AR in 1996. Among approximately 1000 M_1 panicle-to-M_2 rows, 5 out of 16 plants in a single row were observed to have the *eui* phenotype, which is characterized by near doubling in length of the uppermost internode (Rutger and Carnahan, 1981), resulting in the panicle being noticeably extruded above the flag leaf. Progeny tests of the 5 *eui* plants showed then to be true-breeding for the *eui* phenotype. Progeny tests of the remaining 11 normal semidwarf plants, conducted in the greenhouse in 2002–2003, showed that 5 were true-breeding for the normal semidwarf plant type, while the other 6 segregated for normal and *eui* plant type. The composite segregation was 103 normal:24 *eui*, a satisfactory fit ($0.10 < P < 0.25$) to the 3:1 ratio also observed for *japonica eui* stocks (Rutger and Carnahan, 1981; Mackill et al., 1994). In height measurements of 20 *eui* and 20 normal plants in these populations, the *eui* plants averaged 107 cm tall compared to 76 cm for the normal plants. Much of the height difference was due to the elongated uppermost internode in the *eui* plants, 39 cm versus 22 cm in the normal plants

Being inherited as a recessive tall plant type, the first *eui* (CI 11055, found in California *japonica* germplasm) was postulated as being useful in the male parent in hybrid seed production fields, in order to facilitate transfer of pollen from tall males to short females in crossing blocks (Rutger and Carnahan, 1981). Subsequently three groups have transferred the *eui* gene into *indica* rice (Virmani et al., 1988; He and Shen, 1991; Yang et al., 2000). The *eui* gene has been shown to be a recurring mutation in California *japonica* rice (Mackill et al., 1994). In the cross CI 11055/Guichao 2 *eui*, four F_1 plants had the tall *eui* phenotype, as did all 119 resulting F_2 plants, indicating that this new *eui* also is allelic to the previous source. Having *eui* in an *indica* background is useful in that this circumvents the need to cross and backcross the *japonica* source into *indicas*. A composite of approximately 100 *eui* panicles from a 2002 AR planting was made to form the Guichao *eui* release

Genetic stock amounts (about 1 g) Guichao 2 *eui* have been placed in the Genetic Stocks–*Oryza* (GSOR) collection and are available for distribution to geneticists, breeders, and other research personnel upon written request to: J. Neil Rutger, Dale Bumpers National Rice Research Center, USDA-ARS, P.O. Box 1090, Stuttgart, AR 72160. Genetic stock also will be deposited in the National Center for Genetic Resources Preservation, 1111 S. Mason Street, Ft. Collins, CO 80521-4500. If this genetic stock contributes to the development of new genetic information or germplasm, it is requested that appropriate recognition be given to the source.

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